

A Web-Based Nuclear Criticality Safety Bibliographic Database

B. L. Koponen, S. T. Huang

This article was submitted to
American Nuclear Society Annual Winter Meeting
Washington, DC
November 12-16, 2000

June 21, 2000

U.S. Department of Energy

Lawrence
Livermore
National
Laboratory

DISCLAIMER

This document was prepared as an account of work sponsored by an agency of the United States Government. Neither the United States Government nor the University of California nor any of their employees, makes any warranty, express or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. Reference herein to any specific commercial product, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the United States Government or the University of California. The views and opinions of authors expressed herein do not necessarily state or reflect those of the United States Government or the University of California, and shall not be used for advertising or product endorsement purposes.

This is a preprint of a paper intended for publication in a journal or proceedings. Since changes may be made before publication, this preprint is made available with the understanding that it will not be cited or reproduced without the permission of the author.

A Web-Based Nuclear Criticality Safety Bibliographic Database

Brian L. Koponen

Lawrence Livermore National Laboratory (retired)

Song T. Huang

Lawrence Livermore National Laboratory

The Lawrence Livermore National Laboratory has prepared a Nuclear Criticality Safety Bibliographic Database that is now available via the Internet. This database is a component of the U.S. DOE Nuclear Criticality Safety Program (NCSP) Web site. This WWW resource was developed as part of the DOE response to the DNFSB Recommendation 97-2, which reflected the need to make criticality safety information available to a wide audience. To the extent possible, the hyperlinks on the Web pages direct the user to original source of the reference material in order to ensure accuracy and access to the latest versions. A sample information screen is displayed as Figure 1.

A master index is in place for simple navigation through the site. A search capability is available to assist in locating the on-line reference materials. Among the features included are:

- A user-friendly site map for ease of use
- A personnel registry

- Links to all major laboratories and organizations involved in the many aspects of criticality safety
- General help for new criticality safety practitioners, including basic technical references and training modules
- A discussion of computational methods
- An interactive question and answer forum for the criticality safety community
- Collections of bibliographic references and validation experiments

This paper will focus on the bibliographic database. This database evolved from earlier work done by the DOE's Nuclear Criticality Information System (NCIS) maintained at LLNL during the 1980s. The bibliographic database at the time of the termination of NCIS were composed principally of three parts:

1. A critical experiment bibliography of 1067 citations (reported in UCRL-52769)
2. A compilation of criticality safety papers from Volumes 1 through 41 of the Transactions of the American Nuclear Society (reported in UCRL-53369)
3. A general criticality bibliography of several thousand citations (unpublished).

When the NCIS project was terminated the database was nearly lost but, fortunately, several years later most of the data were restored from backup tapes that had been archived by LLNL's Technology Information System. However, there no longer was sponsorship to improve, update, or maintain online access to the data. The files were subsequently sent to the criticality safety department at Rocky Flats to be included in their criticality safety information resources. During this period, there was some expansion and updating, principally the addition of papers from the

ICNC conferences and American Nuclear Society publications, Nuclear Science & Engineering and Nuclear Technology. Since the Rocky Flats facility is heading for closure maintenance of the database was again threatened. This has now been avoided since LLNL was selected in 1999 to fulfill part of the *Information Preservation and Dissemination* task of the DOE's Nuclear Criticality Safety Program Five-Year Plan. This effort will "collect, preserve and make readily available criticality safety information" and make the information available via the Internet.

Content of the Database

The database is now incorporated into the DOE Nuclear Criticality Safety Project (NCSP) web site at LLNL that is available at <http://ncsc.llnl.gov:8080/>. At the time of the initial installation on the Web site the database contained about 4600 records. An effort is underway to ensure that the information content is as up-to-date and as complete as possible. In the near-term we expect to add several thousand citations. These will be mostly from work that has been published since the mid-1980s, the time of the last major addition to the collection. The updated database will also incorporate over 1600 paper references included in a new edition of a compilation of criticality safety papers from the Transactions of the American Nuclear Society (A publication discussed in another paper submitted to this meeting. Some information was not salvaged from the original NICS database with the result that not all the fields are filled. Since hardcopies of most of the NCIS reports were saved we may be able to restore most of the missing information. We will also consider whether it will be feasible to establish links to available full-text reports.

Conclusion

Availability of the criticality safety website provides an easy-to-use resource for criticality safety practitioners. This website is the result of the efforts of many members of the criticality safety community. The bibliographic element is an important element. A lot of work remains in the

current expansion phase, including removal of duplications, filling-in missing fields (especially abstracts), and correction of errors and omissions. Although the work will be in progress for quite some time, criticality safety practitioners are invited to use the database even as it expands. Feedback is encouraged, of course.

This work was performed under the auspices of the U.S. Department of Energy by the University of California, Lawrence Livermore National Laboratory under Contract No. W-7405-Eng-48.

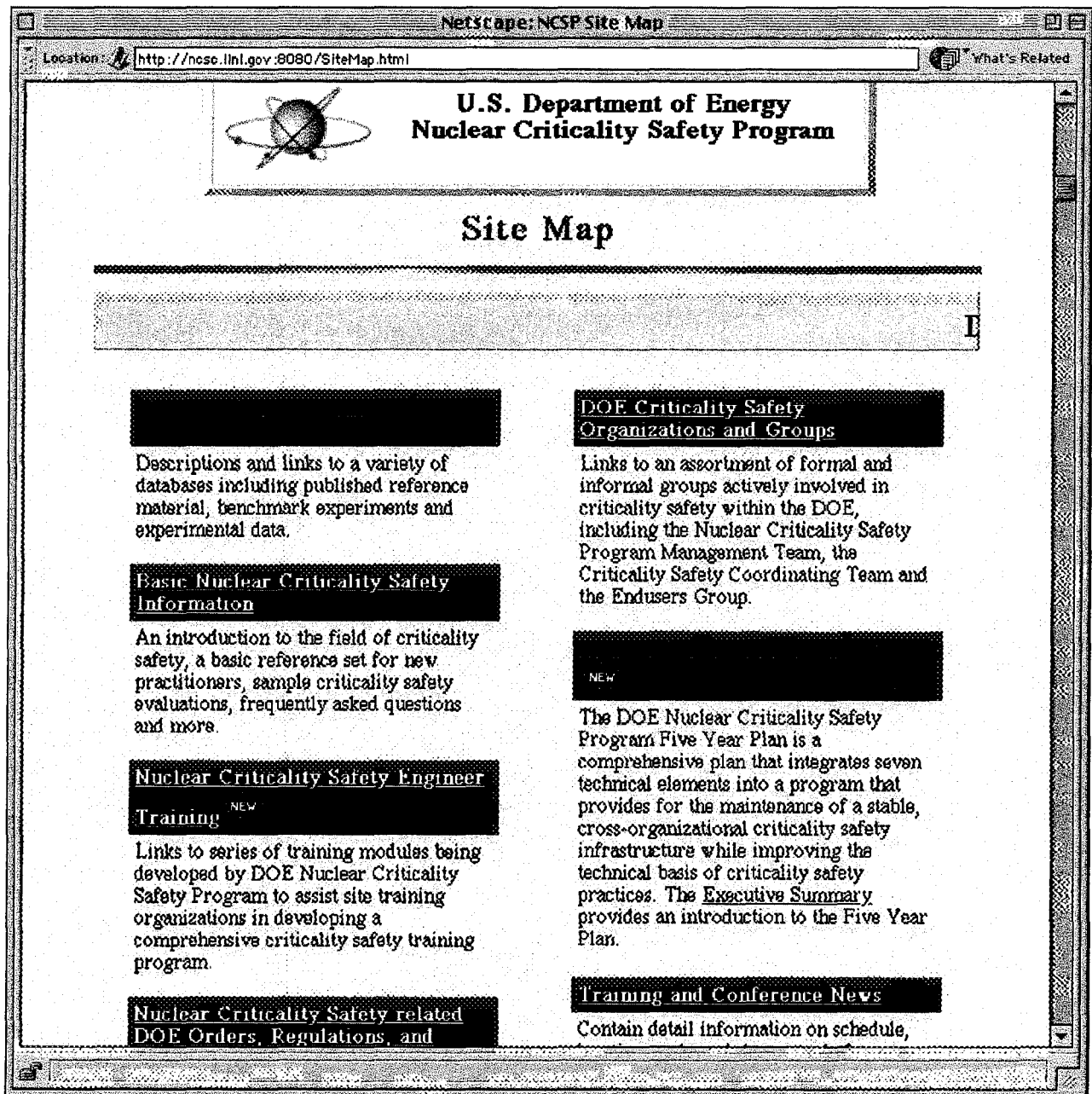


Figure 1. A Sample NCSC Information Screen